



CASE STUDY: SMART Depot Personnel Protection System (DPPS) Protecting people and processes in metro depots

DPPS is used in some of the world's most advanced metro facilities to protect staff and equipment and improve efficiency by mitigating human error.

Most major cities are served by metro systems, carrying millions of passengers daily. To keep these crucial transport networks running, time is of the essence during maintenance. So how do you reduce downtime without compromising safety?

Challenge: Moving trains are one of the biggest causes of accidents investigated by the EUA and depot workers are among the most at risk. As reliance on metro systems increases across Europe, how do you manage the daily dangers faced by the staff who keep them on track?

Solution: DPPS uses the latest technology to create safe zones in which maintenance staff can work. It is the most thoroughly tested and proven system in use, offering a low-risk option to metro depots looking to improve their working environment.

Results: DPPS is already reducing the risks faced by metro depot workers worldwide, allowing the safe and efficient control of rail vehicles within the maintenance environment. It is currently used extensively across the UK, Middle East and Australia.





The complexity of the metro maintenance environment cannot be overstated. Daily exposure to high-speed vehicles, high voltage electricity and powerful machinery requires everyone to remain vigilant. The key to making improvements is to identify blind spots and embrace modern technology.

Zonegreen, part of the Sentric Safety Group, have a Depot Personnel Protection System (DPPS) which is installed in some of the most advanced metro maintenance facilities around the world, protecting people from plant and vehicle movements.

Staff are issued with contactless RFID cards that can be programmed with various levels of authorization, depending on the person's role and position. When beginning work in an area of risk, they log on to road end panels that prevent derailleurs from being lowered, stopping trains or trams from entering the occupied road. Only after the road is clear and the derailer has been lowered will the shunt signal change to 'proceed.' Audible and visual warnings are then activated to alert staff to imminent vehicle movement.

Doha Metro

Zonegreen worked closely with Qatar Rail to install DPPS in three facilities for Doha Metro, which is one of the world's most advanced metro systems and began operation in 2019. The first to benefit from the system was the state-of-the-art Al Wakra Heavy Maintenance Depot, which serves Doha's red line. It protects staff working on 14 roads and is interlocked with the wheel lathe and two bogie underfloor equipment exchange systems (BUEES), blocking vehicle

movements if the bridging rails are not in place.

Zonegreen's timely installation at Al Wakra helped Qatar Rail open the first section of the metro system to the public almost a year ahead of its planned launch date.

In a second phase of work, DPPS was installed at the Al Rayyan depot on the green line, which consists of three maintenance buildings, with capacity to house 90 three-car trains. The system controls vehicle movements in and out of the shed and on seven single-ended roads, four of which are fitted with powered derailleurs.

The final depot to benefit from Zonegreen's technology was the Ras Bu Abboud stabling yard that serves the metro's gold line. This single road facility was fitted with warning beacons and klaxons to alert staff to vehicle movements.

Christian Fletcher, Zonegreen's head of engineering, said: *"Qatar Rail embraced cutting edge technology in all aspects of Doha Metro's construction and DPPS was no exception. It guaranteed depot safety and efficiency from the outset on this highly sophisticated transport network and has worked reliably ever since."*

In all three Doha Metro depots, staff use DPPS' personalised datakeys to activate protection in the area in which they wish

to work, without disabling the entire facility. Those with higher level access can also control vehicle movements with ease and efficiency, at a fraction of the cost of a full signalling solution..

Australia and the UK

Working with Australian partners, Andrew Engineering, Zonegreen installed DPPS at the High Capacity Metro Trains maintenance facility in Pakenham, East Victoria. This 16-road system incorporates visible and audible warnings indicating when vehicle movements have been authorised, along with a signalling interface that prevents routes being set when staff are logged onto specific roads.

Back at home in the UK, DPPS protects a two-road shed that forms part of the Nexus Learning Centre in South Shields. Working alongside the metro operator, Zonegreen is helping ready staff for life in a maintenance facility. Interlocking technology is embedded into the system to control access gates on high level gantries, protecting students from the dangers of working alongside the overhead line. Only when the OHLEs have been earthed can the access gates be opened to allow entry.

For more information about DPPS and its application in metro depots, don't hesitate to contact us. Email: info@zonegreen.co.uk